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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,980	09/29/2000	Arthur Zavalkovsky	50325-0106	1727

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EXAMINER	
BATES, KEVIN T	

ART UNIT	PAPER NUMBER
2155	9

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/675,980	ZAVALKOVSKY ET AL.	
	Examiner	Art Unit	
	Kevin Bates	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 7.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to a communication made on February 2, 2004.

The Information Disclosure Statement was received on October 17, 2003.

Claims 1-26 are pending in this action.

Response to Arguments

Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-21 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derby (5359593) in view of Koskelainen (6570851).

Regarding claims 1, 5, 9, 13, and 14, Derby discloses a method for dynamically adapting packets of data in a packet-switched network based on achieved flow bandwidth information within the network (Column 2, lines 20 – 25), comprising the computer-implemented steps of: routing a first group of one or more packets of a data flow with a first behavioral treatment value, wherein the first behavioral treatment value directs devices within the network to treat the first group of one or more packets with a first quality of service treatment (Column 5, lines 47 – 55); determining an achieved flow bandwidth for the data flow based on data traffic within the network (Column 6, lines 21

– 27); determining a second behavioral treatment value based on the achieved flow bandwidth within the network; and routing a second group of one or more packets of said data flow with said second behavioral treatment value, wherein the second behavioral treatment value directs devices within the network to treat the second group of one or more packets with a second quality of service treatment (Column 6, lines 30 – 34), but Derby discloses the changes being made to a leaky bucket function in the network to control the QoS of the data flow, not marking the packet header with new QoS information. Koskelainen teaches a network that uses differentiated services that uses DSCP values in the header to tell the network node how to process the packet thus controlling its QoS (Column 4, lines 20 – 29). Combining the teachings of Koskelainen and Derby would result in a system that changes the DSCP values on the packets of a flow in order to alter the bandwidth usage of that flow. It would have been obvious to one of ordinary skill in the art at the time the invention was made use Koskelainen's teaching in Derby's system in order to have Derby's system work in a very large scaleable system that the differential service works well in (Column 2, lines 25 – 33).

Regarding claims 2, 6, and 10, the combination of Derby and Koskelainen discloses the step of marking a first group of one or more packets includes the step of storing a first differentiated services codepoint (DSCP) value in each header of the first group of one or more packets of a data flow; the step of determining a second behavioral treatment value includes the step of determining a second DSCP value; and the step of marking a second group of one or more packets includes the step of storing

the second DSCP value in each header of the second group of one or more packets of a data flow because Derby teaches the use of setting up a first setting on a leaky bucket, then later determining a second setting for the leaky bucket (Column 5, lines 30 – 37; Column 6, lines 30 – 34) and it combined with Koskelainen's teaching of using DSCP values to mark the packets (Column 4, lines 22 – 29) which controls the bandwidth controls within the nodes of the network for the flow, so the combination of Derby and Koskelainen for the motivation seen in claim 1 would disclose changing the DSCP values in order to change the bandwidth of the flow.

Regarding claims 3, 7, and 11, the combination of Derby and Koskelainen discloses the steps of determining packet flow characteristics of the first group of one or more packets of a data flow (Derby, Column 6, lines 53 – 55); and determining the second behavioral treatment value based on the available bandwidth within the network and the packet flow characteristics of the first group of one or more packets of a data flow (Derby, Column 6, lines 21 – 30).

Regarding claims 4, 8, and 12, the combination of Derby and Koskelainen discloses the steps of establishing a Quality of Service (QoS) policy for applying a per-hop-behavior treatment for forwarding packets within a flow in said network; and generating the first behavioral treatment value based on the established QoS policy (Derby, Column 5, lines 47 – 64; Koskelainen, Column 4, lines 5 – 9).

Regarding claim 15, Derby in combination with Koskelainen discloses that the first behavioral treatment is determined without regard to the achieved flow bandwidth (Derby, Column 5, lines 47 – 55).

Regarding claim 16, Derby in combination with Koskelainen discloses that the second behavioral treatment is a behavioral treatment that provides a lower level of service than other available choices of behavioral treatments (Derby, Column 6, lines 38 – 40); and wherein the second behavioral treatment provides a high enough level of service to accommodate the achieved flow bandwidth (Derby, Column 2, lines 30 – 35).

Regarding claim 17, Derby in combination with Koskelainen discloses the second behavioral treatment is a behavioral treatment that provides a minimum level of service that is a sufficient level of service to accommodate the achieved flow bandwidth (Derby, Column 2, lines 32 – 35).

Regarding claim 18, Derby in combination with Koskelainen discloses the step of marking the first group is performed by at least communicating the first behavioral treatment to a differentiated services node located at a border of a differentiated services domain; and wherein the step of marking the second group is performed by at least communicating the second behavioral treatment to the differentiated services node (Derby, Column 5, lines 30 – 37; Column 6, lines 30 – 34; Koskelainen, Column 4, lines 22 – 29).

Regarding claim 19, Derby in combination with Koskelainen discloses repeating the step of determining the achieved flow bandwidth and steps that follow the step of determining the achieved flow bandwidth (Derby, Column 6, lines 21 – 34).

Regarding claim 20, Derby in combination with Koskelainen discloses repeating the step of determining the achieved flow bandwidth and steps that follow the step of

determining the achieved flow bandwidth multiple times, therein enhancing efficiency of the network on an on going basis (Derby, Column 6, lines 30 – 34).

Regarding claim 21, Derby in combination with Koskelainen discloses the step of determining the achieved flow bandwidth is performed by at least estimating the achieved flow bandwidth based on Management Information Base (MIB) variables (Derby, Column 5, lines 47 – 55).

Regarding claim 24, Derby in combination with Koskelainen discloses a method for marking one or more packets of data in a packet-switched network based on achieved flow bandwidth information within the network (Derby, Column 2, lines 20 – 25; Koskelainen, Column 4, lines 20 – 29), comprising the computer-implemented steps of marking a first group of packets of a plurality of data flows with an initial set of behavioral treatment values, wherein the first set of behavioral treatment values direct devices within the network to treat the first group packets with an initial set of quality of service treatments (Derby, Column 5, lines 47 – 55); determining achieved flow bandwidths, wherein an achieved flow bandwidth is determined for each of the plurality of data flows based on data traffic within the network (Derby, Column 6, lines 21 – 27); determining an updated set of behavioral treatment values based on the achieved flow bandwidths within the network; and after the steps of marking the first group and determining the updated set of behavioral treatment values, marking a second group packets of said plurality of data flows with said updated set of behavioral treatment values, wherein the updated set of behavioral treatment values direct devices within the

network to treat the second group of packets with an updated set of quality of service treatments (Derby, Column 6, lines 30 – 34).

Regarding claim 25, Derby in combination with Koskelainen discloses a method for performing packet marking (Derby, Column 2, lines 20 – 25; Koskelainen, Column 4, lines 20 – 29) comprising the computer implemented steps of defining an initial set of Quality of Service (QoS) values for coloring packets within a plurality of data flows, wherein each of the QoS values indicates an allocation of bandwidth (Derby, Column 5, lines 47 – 55); coloring a first group of one or more packets of a given data flow selected from the plurality of data flows, without regard to an achieved flow bandwidth, by at least communicating the initial set of QoS values to each of one or more edge differentiated services domain nodes that are located at one or more edges of a differentiated services domain, and the one or more edge differentiated services domain nodes using one or more of the initial set of QoS values to color the first group (Derby, Column 5, lines 47 – 65); estimating traffic bandwidth within the network based on bandwidth information corresponding to a current traffic pattern of the network, wherein the traffic bandwidth estimated includes an achieved flow bandwidth for the given data flow (Derby, Column 6, lines 21 – 27); determining an updated set of QoS values for coloring packets within the plurality of data flows, based on the traffic bandwidth estimated, wherein the updated set of QoS values provide lower levels of service than other available choices of QoS values, and wherein the updated set of QoS values provide a high enough level of service to accommodate the traffic bandwidth estimated (Derby, Column 6, lines 30 – 34; Column 2, lines 31 – 41); coloring a subsequent group

of one or more packets of the given data flow with the one or more of updated set of QoS values by at least communicating the updated set of QoS values to each of one or more edge differentiated services domain nodes, and the one or more edge differentiated services domain nodes using one or more of the updated set of QoS values to color the subsequent group (Derby, Column 6, lines 28 – 34); repeating the steps of estimating traffic bandwidth, determining an updated set of QoS values, and coloring a subsequent group multiple time, therein tuning the network on an ongoing basis (Derby, Column 6, lines 30 – 34).

Regarding claim 26, Derby in combination with Koskelainen discloses that the initial set of QoS values is an initial set of Differentiated Services Codepoint (DSCP) values (Koskelainen, Column 4, lines 20 – 29); wherein the updated set of QoS values is an updated set of DSCP values; wherein the step of estimating traffic bandwidth further comprises the steps of defining one or more QoS policies that specify target bandwidth values and a range of possible services for each the plurality of data flows (Derby, Column 2, lines 20 – 30), wherein a given target bandwidth value is specified for the given data flow (Derby, Column 2, lines 33 – 35), and wherein the given target bandwidth identifies a specific bandwidth that is desirous or required by the given data flow (Derby, Column 2, lines 20 – 35); gathering information about the traffic bandwidth; and determining the traffic bandwidth based on the information gathered (Derby, Column 2, lines 41 – 52).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Koskelainen as applied to claims 1-21 and 24-26 above, and further in view of Dillon (6473793).

Regarding claim 22, the combination of Derby and Koskelainen does not explicitly indicate that the step of determining the achieved flow bandwidth is performed by at least checking a Transfer Control Protocol/ Internet Protocol (TCP/IP) window size and determining a value for the achieved flow bandwidth based on the TCP/IP window size. Dillon teaches the idea of using the information in TCP/IP protocol to help enforce data rates in a network (Column 3, lines 41 – 58). It would have been obvious to one of ordinary skill in the art at the time the invention was made because TCP is a common connection type in the internet and it can easily be throttled based on window size (Column 1, lines 51 – 65).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derby in view of Koskelainen as applied to claims 1-21 and 24-26 above, and further in view of Bushmitch (5928331).

Regarding claim 23, Derby in combination with Koskelainen does not explicitly indicate that the step of determining the achieved flow bandwidth is based on reception quality feedback from a Real-Time Transport Protocol (RTP) receiver. Bushmitch teaches that RTP information it associated with RTCP packets that have flow control and session management information about the flow (Column 6, lines 13 – 24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use RTP control feedback to learn all the information the that the network needs to

know about the achieved bandwidth of the flow and also because RTP deals with applications such as streaming data which keeping a QoS is more important (Column 1, lines 36 – 59).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No. 6324184 issued to Hou because it has flow detection and bandwidth throttling.

U. S. Patent No. 6154776 issued to Martin because it has QoS and directory service values.

U. S. Patent No. 6046980 issued to Packer because it has traffic flows and classes and enforcement of bandwidth limits.

U. S. Patent No. 6021263 issued to Kujoory because it has traffic classes, RSVP, and QoS.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Bates whose telephone number is (703) 605-0633. The examiner can normally be reached on 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (703) 308-6662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KB

KB
April 7, 2004

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER